

Texas Success Initiative
Sample Questions
Intermediate Algebra Sample Questions

These practice tests are solely intended to complement your studying.
There is no guarantee, implied or otherwise, that these alone will enable you to pass.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Simplify the expression without the use of a calculator.

- 1) $[37 - (4 + 6) \div 2] - [1 + 9 \div 3]$
A) 25 B) 23 C) 28 D) 35

- 2) $\frac{10 + |15 - 5|}{13 - 1}$
A) $\frac{5}{2}$ B) 32
C) $\frac{5}{3}$ D) $\frac{10}{7}$

Factor the trinomial completely. If the polynomial cannot be factored, write "prime."

- 3) $15z^2 + 14z - 8$
A) $(3z + 4)(5z - 2)$ B) $(3z - 4)(5z + 2)$
C) prime D) $(15z + 4)(z - 2)$

- 4) $10x^2 + 23x + 12$
A) $(10x + 3)(x + 4)$ B) $(2x + 3)(5x + 4)$
C) $(2x - 3)(5x - 4)$ D) prime

- 5) $x^2 + 4x - 45$
A) $(x - 9)(x + 1)$ B) prime
C) $(x + 9)(x - 5)$ D) $(x - 9)(x + 5)$

- 6) $x^2 - x - 12$
A) prime B) $(x + 4)(x - 3)$
C) $(x + 3)(x - 4)$ D) $(x + 1)(x - 12)$

- 7) $3x - 28 + x^2$
A) prime B) $(x - 7)(x + 1)$
C) $(x - 7)(x + 4)$ D) $(x + 7)(x - 4)$

- 8) $5x^3 + 5x^2y - 60xy^2$
A) $(x - 3y)(5x^2 + 20xy)$
B) $5x(x - 3y)(x + 4y)$
C) $5x(x + 3y)(x - 4y)$
D) prime

- 9) $5t^5 - 5t^4 - 30t^3$
A) $(5t^4 + 10)(t - 3)$ B) $5t^3(t - 2)(t + 3)$
C) $(t - 2)(5t^4 + 15)$ D) $5t^3(t + 2)(t - 3)$

Solve the equation.

- 10) $\frac{x}{7} - 9 = -5$
A) -30 B) 30
C) 28 D) -28

- 11) $\frac{3}{2}x + \frac{1}{5} = \frac{7}{5}x$
A) -16 B) 16
C) -2 D) 2

- 12) $-0.65(20) + 0.70x = 0.40(20 + x)$
A) 70 B) 80 C) 35 D) 60

- 13) $x^2 - 4x = 45$
A) 9, 5 B) 9, -5
C) -9, 1 D) -9, 5

- 14) $x^2 + 3x = 54$
A) 9, 6 B) 9, -6
C) -9, 6 D) -9, 1

- 15) $x - \sqrt{5x} = 1$
A) $\frac{7 - 3\sqrt{5}}{2}, \frac{7 + 3\sqrt{5}}{2}$
B) $\frac{7 + 3\sqrt{5}}{2}$
C) $\frac{7 + \sqrt{53}}{2}$
D) $\frac{-7 - 3\sqrt{5}}{2}, \frac{-7 + 3\sqrt{5}}{2}$

16) $\frac{4}{x} + \frac{5}{x-9} = 1$

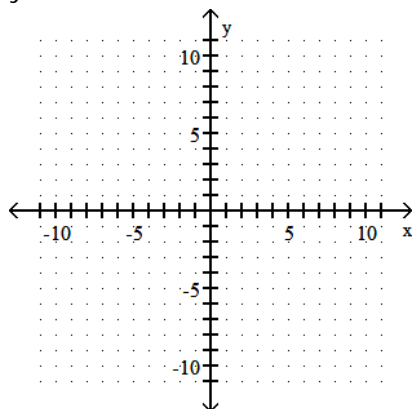
- A) $9 - 3\sqrt{13}, 9 + 3\sqrt{13}$
 B) $-9 - 3\sqrt{5}, -9 + 3\sqrt{5}$
 C) $-9 - 3\sqrt{13}, -9 + 3\sqrt{13}$
 D) $9 - 3\sqrt{5}, 9 + 3\sqrt{5}$

17) $\frac{2}{t} = \frac{t}{5t-12}$

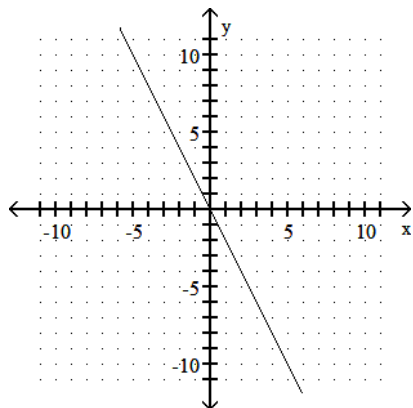
- A) 4, 6
 B) $0, \frac{24}{9}$
 C) 0, 36
 D) 0

Graph the linear equation.

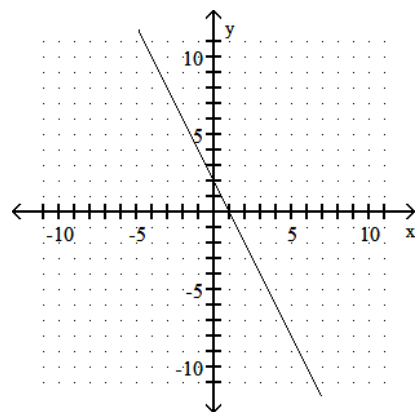
18) $y = -2x + 9$



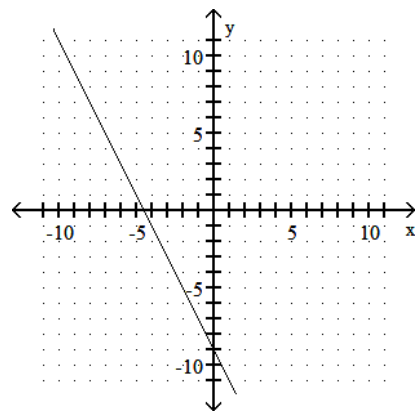
A)



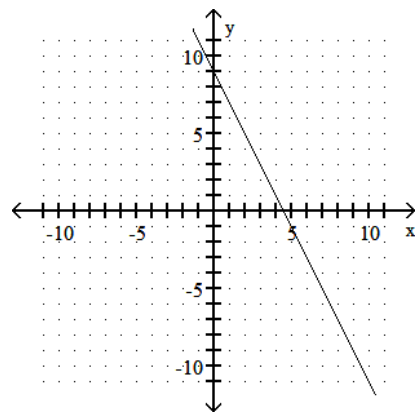
B)



C)



D)



19) $(x^2 + 5x + 6) \div (x + 2)$

- A) $x^2 + 5$
 B) $x + 3$
 C) $x + 5$
 D) $x^2 + 3$

20) $(x^2 - 36) \div (x - 6)$

- A) $x^2 - 6$
 B) $x + 36$
 C) $x + 6$
 D) $x - 36$

21) $(6x - 1)(x^2 - 3x + 1)$

- A) $6x^3 - 17x^2 + 3x - 1$
- B) $6x^3 - 18x^2 + 6x + 1$
- C) $6x^3 + 19x^2 - 9x + 1$
- D) $6x^3 - 19x^2 + 9x - 1$

22) $(x + 8)(x^3 + 7x - 4)$

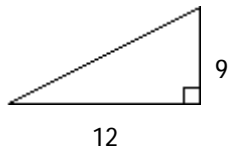
- A) $x^4 + 7x^2 - 4x + 8$
- B) $x^4 + 8x^3 + 7x^2 + 52x - 32$
- C) $x^3 + 15x^2 + 52x - 32$
- D) $x^4 + 8x^3 + 7x^2 + 60x + 32$

23) $(2a - 1)^2$

- A) $4a^2 + 1$
- B) $2a^2 + 1$
- C) $4a^2 - 4a + 1$
- D) $2a^2 - 4a + 1$

Find the missing length.

24)



- A) 24
- B) 12
- C) $25\frac{1}{2}$
- D) 15

Solve the system of equations.

25) $\begin{cases} 3x - 2y = -17 \\ y = x + 6 \end{cases}$

- A) (0, 6)
- B) (-3, -2)
- C) (-5, 1)
- D) (1, 5)

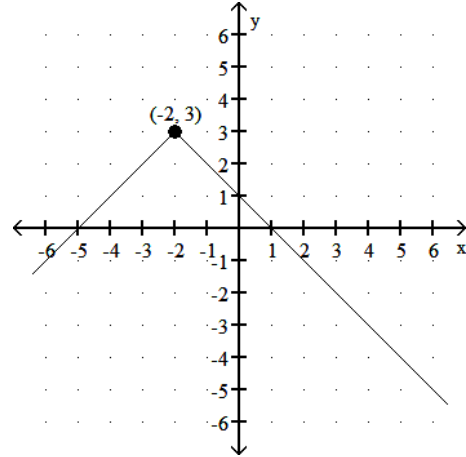
Find the domain and the range of the relation.

26) $\{(9, 4), (-9, 0), (-2, -2), (11, -9)\}$

- A) domain: $\{-9, 0, 4, 9\}$; range: $\{-9, -2, 11\}$
- B) domain: $\{-9, -2, 9, 11\}$; range: $\{0, 4\}$
- C) domain: $\{-2, 0, 9, 11\}$; range: $\{-9, -2, 4, 11\}$
- D) domain: $\{-9, -2, 9, 11\}$; range: $\{-9, -2, 0, 4\}$

Find the domain and range of the function graphed.

27)



- A) domain: $(-\infty, \infty)$; range: $(-\infty, \infty)$
- B) domain: $(-\infty, -2) \cup (-2, \infty)$; range: $(-\infty, 3) \cup (3, \infty)$
- C) domain: $(-\infty, \infty)$; range: $(-\infty, 3]$
- D) domain: $(-\infty, -2]$; range: $(-\infty, 3]$

Find an equation of the line. Write the equation using function notation.

28) Through (7, 3); parallel to $f(x) = 4x - 6$

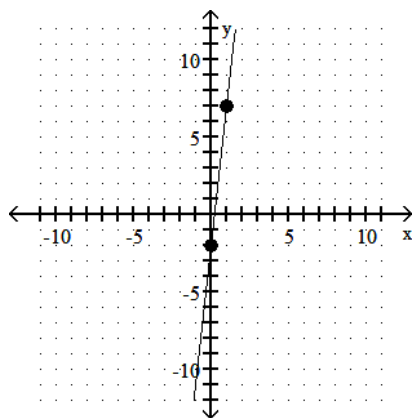
- A) $f(x) = -4x - 25$
- B) $f(x) = 4x + 3$
- C) $f(x) = 4x + 31$
- D) $f(x) = 4x - 25$

29) Through (3, -3); perpendicular to $x + 4y = -4$

- A) $f(x) = 4x - 9$
- B) $f(x) = -\frac{1}{4}x - \frac{15}{4}$
- C) $f(x) = \frac{1}{4}x - \frac{15}{4}$
- D) $f(x) = 4x - 15$

Find an equation of the line graphed. Write the equation using function notation.

30)



A) $f(x) = -9x - 2$

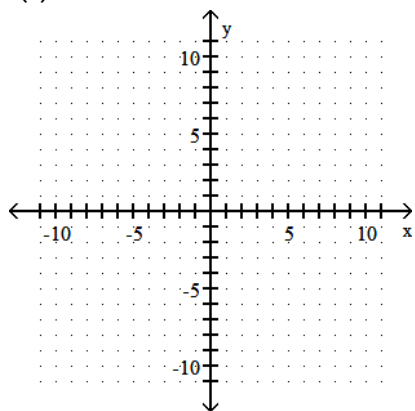
B) $f(x) = 9x - 2$

C) $f(x) = 9x + 2$

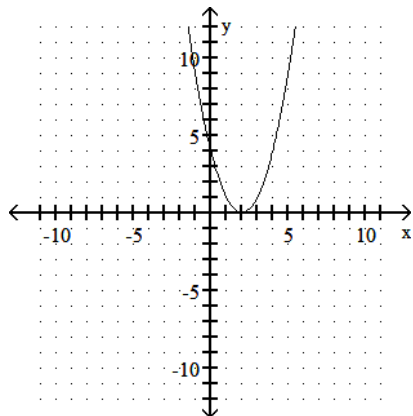
D) $f(x) = -9x + 2$

Graph the function.

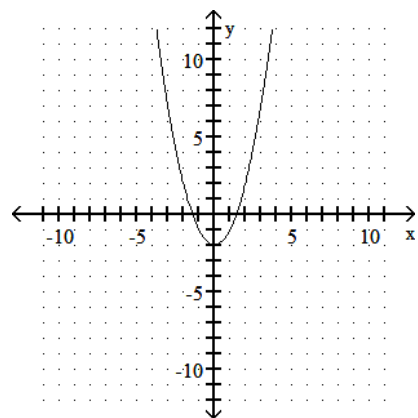
31) $f(x) = x^2 - 2$



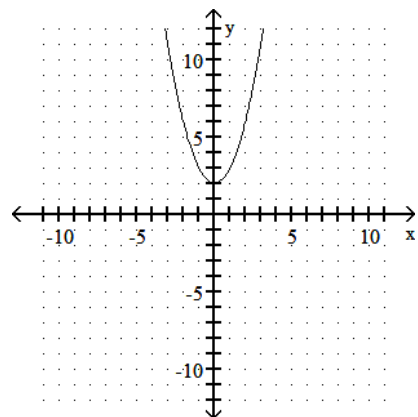
A)



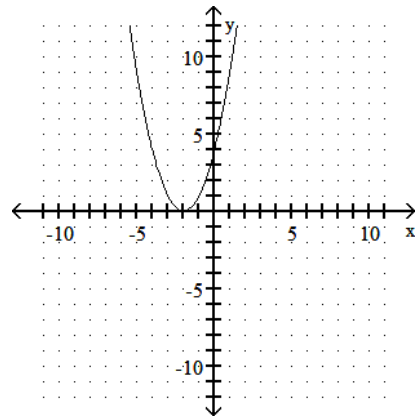
B)



C)

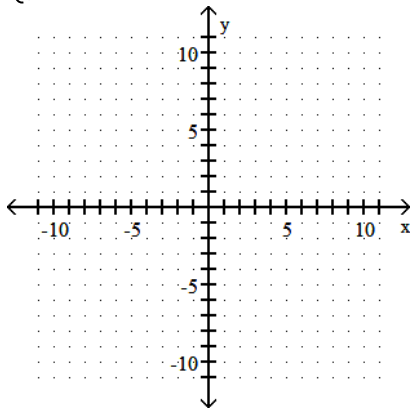


D)

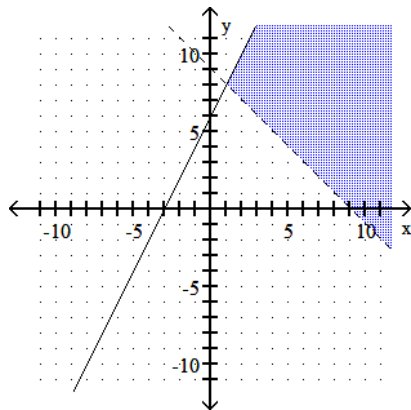


32) Graph the solution of the system of linear inequalities.

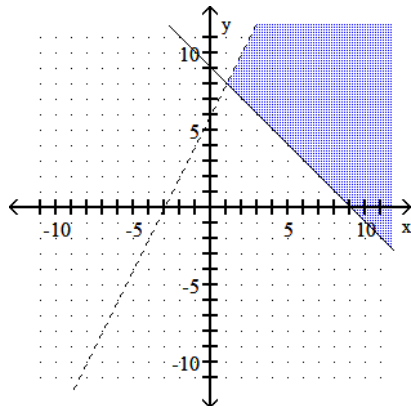
$$\begin{cases} y < 2x + 6 \\ y \geq -x + 9 \end{cases}$$



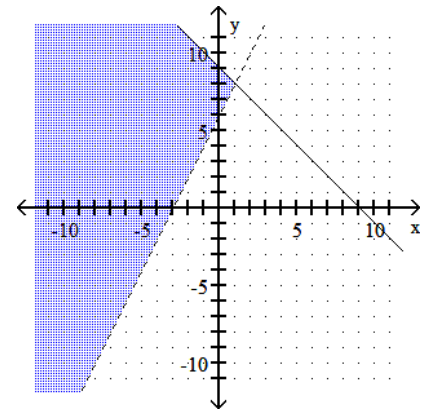
A)



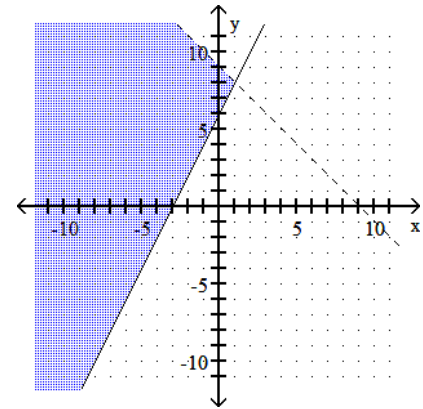
B)



C)



D)



Use the product rule to multiply. Assume all variables represent positive real numbers.

33) $\sqrt{7x^3} \cdot \sqrt{7x^5}$

A) $\sqrt{49x^8}$

B) $x^4\sqrt{14}$

C) $7x^4$

D) $\sqrt{7x^4}$

34) $\sqrt[3]{27} \cdot \sqrt[3]{216}$

A) -18

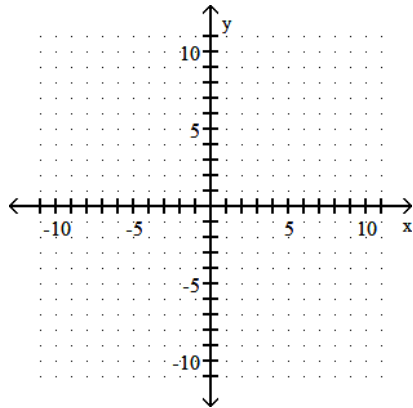
B) 18

C) -3

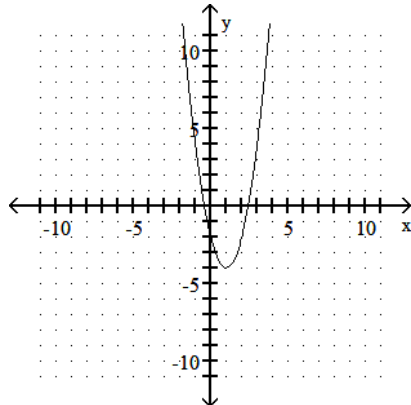
D) 9

35) Sketch the graph of the quadratic function.
Give the vertex and axis of symmetry.

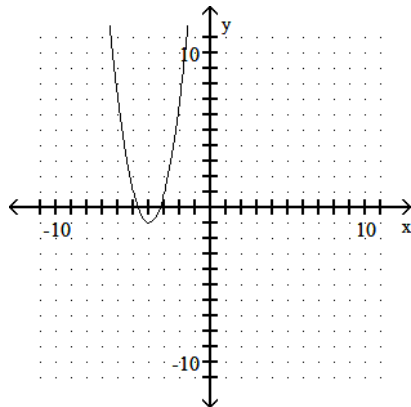
$$f(x) = 2(x - 4)^2 - 1$$



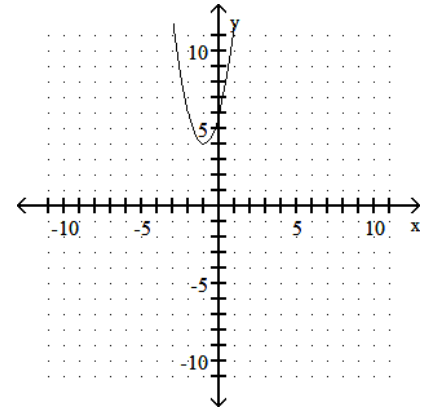
A) vertex $(1, -4)$; axis $x = 1$



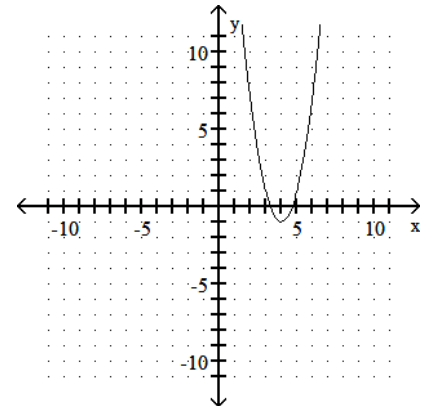
B) vertex $(-4, -1)$; axis $x = -4$



C) vertex $(-1, 4)$; axis $x = -1$



D) vertex $(4, -1)$; axis $x = 4$



Answer Key

Testname: TSI INTERMEDIATE ALGEBRA SAMPLE QUESTIONS

- 1) C
- 2) C
- 3) A
- 4) B
- 5) C
- 6) C
- 7) D
- 8) B
- 9) D
- 10) C
- 11) C
- 12) A
- 13) B
- 14) C
- 15) B
- 16) D
- 17) A
- 18) D
- 19) B
- 20) C
- 21) D
- 22) B
- 23) C
- 24) D
- 25) C
- 26) D
- 27) C
- 28) D
- 29) D
- 30) B
- 31) B
- 32) B
- 33) C
- 34) B
- 35) D